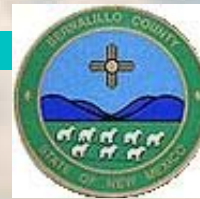


Martin J. Chávez, Mayor

ALBUQUERQUE / BERNALILLO COUNTY
AIR QUALITY CONTROL BOARD
NEWSLETTER



Thaddeus Lucero,
Bernalillo County Manager

The Air Shed

PUBLISHED MONTHLY BY THE AIR QUALITY DIVISION

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SEPTEMBER
AIR QUALITY INDEX:

GOOD!

FOR ACTUAL AQI VALUES,
SEE PAGE 5

City of Albuquerque
Environmental Health Department
Director - 768-2600

Albuquerque / Bernalillo County Air
Quality Control Board
768-2600

Air Quality Division Manager
768-1930

Important Phone Numbers
Air Quality Index & Pollen
768-4731 opt 1 or 766-7664
Burn/No Burn 768-BURN (2876)

Ambient Air
Monitoring - 768-1969
◆ National Ambient Air Quality
Standards
◆ AQI & Seasonal Pollen

Compliance
& Field Enforcement - 768-1930
◆ Facility Inspection
◆ Topsoil Disturbance
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Education, Outreach & Technical
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768-1930
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◆ Permitting Policy / Development
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◆ Emission and Pollutant Inventories
◆ Aerometric Information Retrieval
System [AIRS]

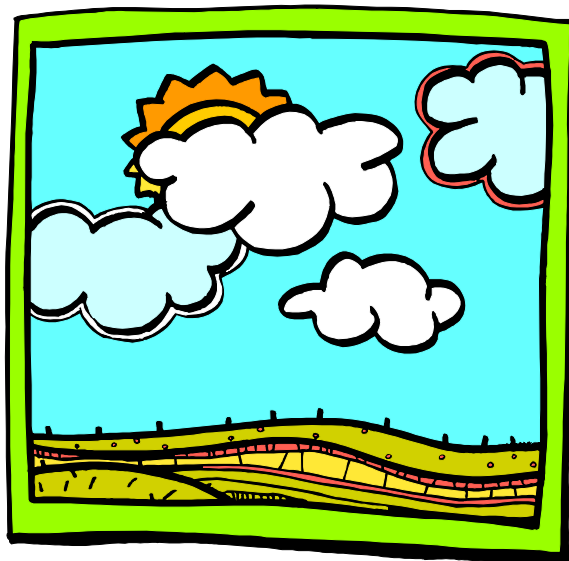
Control Strategies- 768-2600
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◆ Preparation of State Implementation
Plan elements
◆ Air Quality Control Board
◆ Review Federal environmental
assessments

Public Health
Initiatives - 767-5621
◆ Air Quality Complaints
◆ Indoor Air

Quality Assurance - 768-1963
◆ EPA Reporting
◆ Review & Validation of Data

Dark Matter?

There's growing evidence that our planet is getting dimmer. A meticulous examination of the world's weather records by Atsumu Ohmura, director of the Zurich-based World Radiation Monitoring Center, has revealed that the total amount of solar radiation reaching the planet's surface has declined by almost ten per cent since 1958. Ohmura first announced that discovery back in 1988 but his work didn't seem to get much attention. But there's recent and growing consensus among his peers that he's correct. And, if he is, it could have enormous implications.



Oh, there's nothing wrong with the sun! The problem, it appears, is a little closer to home. Our air is getting dirtier. Microscopic particles of pollution in the atmosphere become the seeds, or 'condensation nuclei', around which water vapor condenses to form clouds. The more particulate emissions that are released, the more clouds that form. More clouds means less solar radiation is able to penetrate the atmosphere to reach the ground. And much of the particulate comes in the form of soot. The dark color of the particles further increases their ability to block solar radiation. And, as the number of particles in the atmosphere increases, the average size of the water droplets that form as a result decreases. While smaller water droplets result, there are correspondingly many more of them. Smaller droplets are more efficient at blocking and scattering light than larger ones. The result? More dimming. But, wait a minute, you say. If all that is true, shouldn't the earth be getting cooler, instead of warmer like scientists claim? Mr. Ohmura says this is where we need to be very careful! There may well be a paradox in all of this.

There's little doubt that global average temperatures are on the increase, but not as dramatically as scientists had predicted back in the 1970's. Greenhouse gases like carbon dioxide are transparent to incoming solar radiation but prevent the escape of the accumulated solar energy. As greenhouse gas levels in the atmosphere rise, global average temperatures are expected to rise as well. According to scientists theories, the amount of greenhouse gases emitted into the atmosphere during the 1970's should have led to greater increases in global temperatures. But temperatures increased only slightly, if at all. Scientists have been at a loss to explain the discrepancy until now.

While greenhouse gases are transparent to incoming solar radiation, particles and the clouds they foster are not. During the 1970's, greenhouse gas emissions and particulate emissions were increasing simultaneously, each one, to some extent, canceling out the impacts of the other. Increasing emissions of greenhouse gases were causing global temperatures to rise while emissions of particulates were pulling temperatures down. As a result, a delicate balance between particulate emissions and greenhouse gas emissions was achieved and predictions of dramatic global warming during that period of time failed to materialize. So, that's a good thing, right? Ah, be careful!

Particulate emissions are responsible for thousands of premature deaths each year from cardio-pulmonary diseases. There is an obvious need to curb particulate emissions whenever and wherever possible. But, greenhouse gases have themselves been clearly linked to potential episodes of global warming almost too frightful to imagine. We must also seek reductions in greenhouse gas emissions as well. We clearly have our work cut out for us. If we are to solve these thorny problems we must proceed with caution and use a thoughtful, balanced approach. There is much we still don't understand.

AIR QUALITY CONTROL BOARD REPORT

Summary of Activities Albuquerque/Bernalillo County Air Quality Control Board

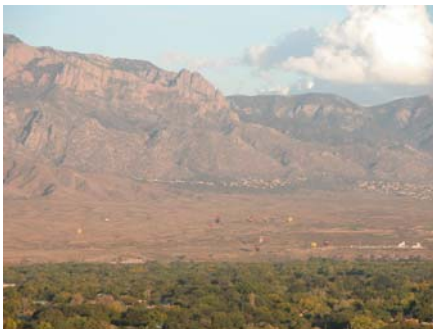
The Albuquerque/Bernalillo County Air Quality Control Board did not meet during the month of September, 2004. Regular business will be resumed at the next meeting scheduled for November 10, 2004.

Air Quality and Animal Services Divisions Share Balloon Fiesta Booth

The City of Albuquerque Environmental Health Department Animal Services and Air Quality Divisions pooled resources to share an information booth at this year's Balloon Fiesta. The Balloon Fiesta, one of New Mexico's premier public events, plays host annually to hot-air balloonists and fans from around the world and offers a unique opportunity for the Department to showcase its efforts to improve the quality of life for the residents of our community.



Albuquerque has long been popular with hot-air balloonists because of "the box", a local meteorological phenomenon that causes air currents to move in opposite directions at different elevations above the ground. These air currents often make it possible for experienced pilots to maneuver the capricious balloons back to near where they took off, allowing for almost circular flights and minimizing the travel distance required for the chase crews to retrieve the balloons.



By watching the balloons' movements around and above our community, visitors to the Balloon Fiesta get a graphic demonstration of how air circulates within our airshed. The Balloon Fiesta presents a perfect opportunity for our Division to

educate the public about air pollution and how it can affect their quality of life.

And, by sharing the booth with our friends from Animal Services Division, maybe we can find homes for a couple puppies as well. What a deal!

Albuquerque / Bernalillo County Air Quality Control Board

Board Members & Staff

Stephen Pilon, City

Karen Wentworth, County

Johnnye Lewis - County

Sue Umshler - County (Chair)

Betty Chang - City (Vice Chair)

Donald Naranjo - City

Vacant - City

Martin J. Chávez, Mayor
City of Albuquerque

Alfredo Santistevan, Director
Environmental Health Department

Isreal L. Tavarez
Air Quality Division Manager/
Secretary to the Board

Adelia Kearny
Assistant City Attorney

Glen Dennis
Vehicle Pollution Management Division Manager

Jens Deichmann
Environmental Planning Commission Liaison

Monthly Board Meetings

Board meetings are usually held the second Wednesday of each month at 5:15 p.m. in the Council/Commission Chambers, lower level, Albuquerque/Bernalillo County Government Center, 1 Civic Plaza, 400 Marquette Avenue NW Albuquerque, NM.

Agendas, which will show the correct date and meeting place, are generally available three days before the meeting and can be obtained by contacting Mr. Neal Butt at 505-768-2660 or via e-mail at: nbutt@cabq.gov.

Notice to persons with disabilities: If you have a disability and require special assistance to participate in any Board meeting please call the Air Quality Division at 505-768-2600 (Voice) or 505-768-2482 (TTY)

Vehicle Pollution Management Program Report

Vehicle Inspection and Maintenance Program:

Two AirCare Stations that were certified under the previous BAR90 program have rejoined the testing program after recently purchasing new BAR97 analyzers from Worldwide Emissions. They are Hometown Automotive, an inspection and repair facility (IR) at Utah and Menaul NE and The Ultimate Car Wash, an inspection only station (IS) at 9210 Eagle Ranch Rd NW.

VPMD is completing some minor facility modifications to improve traffic flow through the retest lanes and to address safety concerns. Performance Tool of Albuquerque recently completed installation of an overhead pipe compressed air distribution system to provide shop air to the analyzers via quick connect accordion style hoses. This new system allowed VPMD to remove air hoses from traffic lanes where they were short lived and created a tripping hazard. Performance Tool is also relocating a hydraulic lift from the retest/training bay to a safer location just outside the bay.



Air Care Inspector Training Program:

Only 16 prospective Air Care inspectors attended the September inspector certification course despite a registration and waiting list totaling more than 20. Eleven (11) students attended all required sessions and passed both the written and practical exams to earn their certification as Air Care inspectors.

VPMD Quality Assurance Technician Edward (Tim) Martinez attended a workshop/training course in On-Board Diagnostics (II) at the Center for Automotive Science at Weber State University. This is an excellent course taught by the foremost experts in the field of OBDII testing and repair. VPMD has been fortunate to be able to offer this course to all of its quality assurance staff over the past few years.

Gas Cap Testing Program:

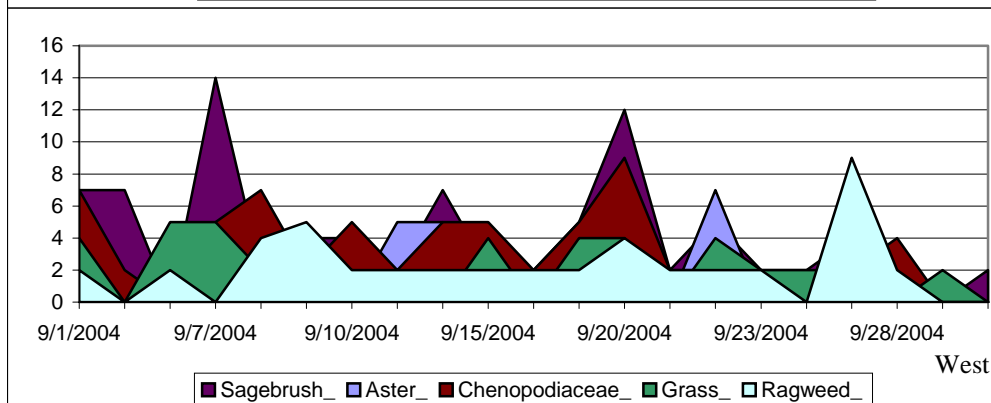
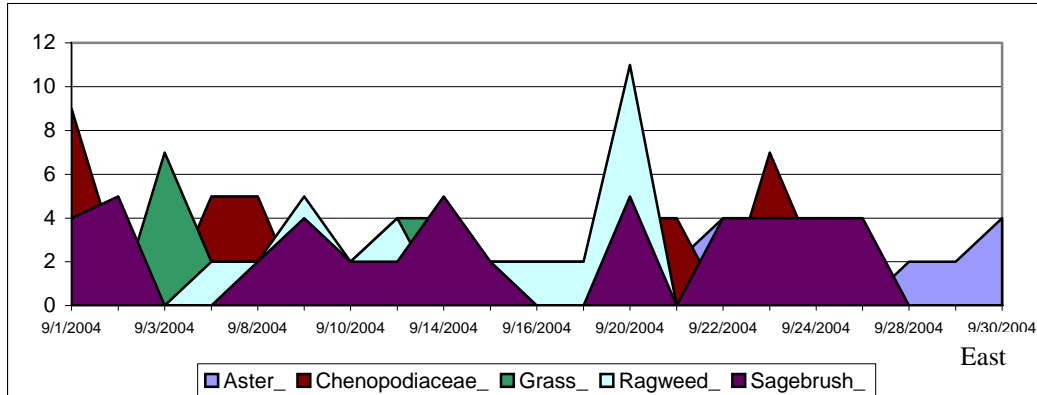
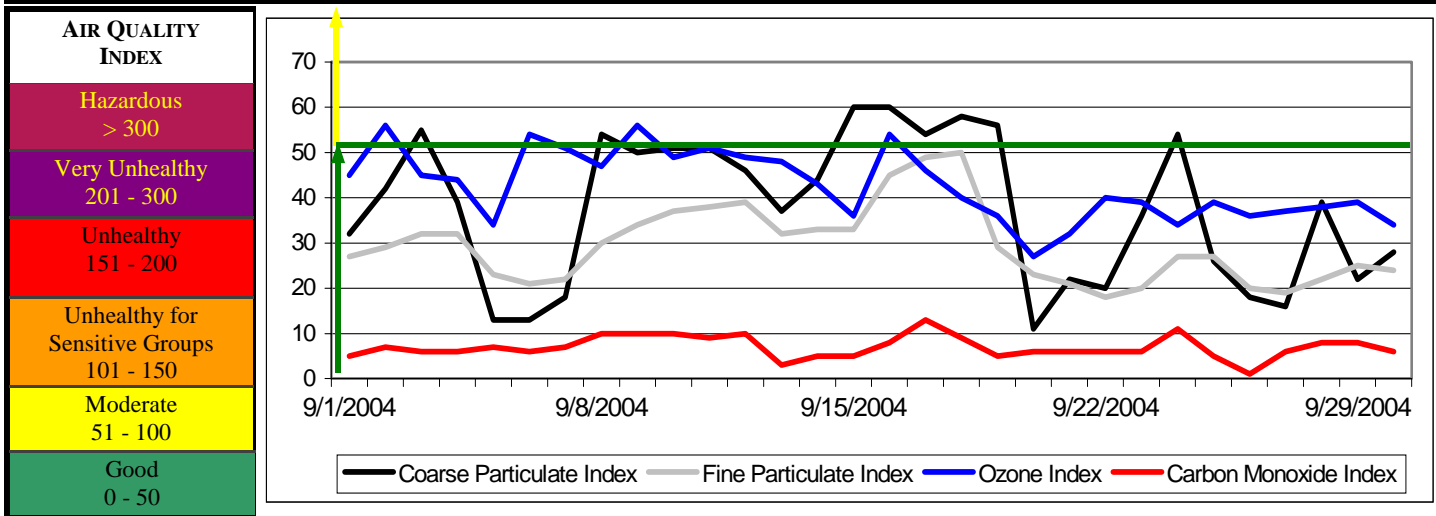
The federal grant administered by the Air Quality Division for gas cap vouchers expired at the end of September coincident with the end of the Federal Fiscal Year. While all vouchers were issued before the end of August, numerous vouchers have still not been redeemed by motorists and/or billed to the City by participating retailers. To help ensure that any remaining vouchers are honored by the retailers, VPMD will reimburse the retailers for any vouchers not covered by the grant.

VPMD has been conducting both overt and covert audits targeted at ensuring the accuracy of the gas cap test and the inspectors conducting the test. Audits have involved passing caps, failing caps, and a truck with dual tanks with one of each. Most inspectors and their equipment have performed flawlessly. One inspector failed to test the second cap (unintentional) and was issued a Notice of Violation and called in for supplemental training. One analyzer was found to have passed a failing cap due to kinks in the hose and was shut down by VPMD until repaired by a Worldwide service technician.

AIR QUALITY DATA FOR SEPTEMBER, 2004

The Air Quality Index [AQI] values indicate how clean or polluted ambient air is, and if there are any health concerns associated with a specific value. The AQI in Bernalillo County is measured for four [4] nationally regulated air pollutants: Carbon Monoxide [CO], Ozone [O₃], Coarse Particulate [PM₁₀] and Fine Particulate [PM_{2.5}].

As shown by the graph below, AQI values were "Good" to "Moderate" in September, which means that air pollutants at this level pose little or no health risks to our community, but those members of our community who already have respiratory problems may be slightly affected. Thus, as the values increase into a higher category, health risks will similarly increase. As you may have guessed, the last category, "Hazardous", with AQI values greater than 300, is very serious and can be detrimental to the health of the whole community even if emergency health warnings are triggered. Call the [Air Quality Information Line](tel:766-7664) at 766-7664 or 768-4731 Option 1 to get today's AQI Values.



The pollen reporting season concludes with this issue, to resume again in March, 2005. Look for something new in this space next month.

Pollen is reported as grains of pollen per cubic meter of air sampled. Air Quality Monitoring staff collect data from areas east and west of the Rio Grande within the greater Albuquerque metropolitan area. Pollen data from a previous 24-hour sampling period is then published in local newspapers in the weather section, broadcast with local news station weather reports, or can be obtained by calling the **Air Quality Information Line**

Line
766-7664

Hurricanes and Pollution

The tragic loss of lives and property during this hurricane season has been well-documented. Storms such as the ones that devastated Florida and coastal communities throughout the Caribbean this summer leave an indelible trail of devastation behind them. But these powerful systems can also have impacts hundreds of miles distant from the storms themselves and in ways difficult to imagine.

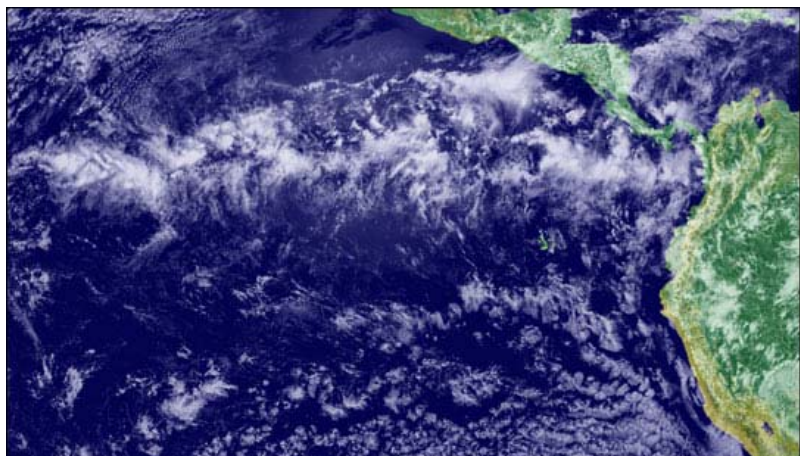
Wind clearly plays a pivotal role in the spread of air pollution. Too little wind can cause local pollution levels to inch upward due to lack of adequate air circulation and dispersal. Too much wind can even create air pollution as microscopic particles (liquid and solid) are carried aloft (entrained) by the wind and dispersed over wide swaths of real estate. Global-scale air circulation patterns caused by differential heating and Earth's rotation chart the path of storms across the globe and lend a certain consistency to weather patterns. But what role, if any, do large scale intermittent meteorological systems like hurricanes play in pollution dispersal?

The term hurricane is derived from the ancient Central American aboriginal term *Huracan*, meaning god of evil. In other parts of the world, hurricanes are known by different names including cyclones and typhoons. By whatever name you know them, hurricanes are a tropical phenomenon. Hurricanes form over warm water in areas of high humidity and light winds. These conditions generally exist in the summer and early fall in the tropical North Atlantic and North Pacific Oceans. "Hurricane season" runs from June through November in the northern hemisphere.

Hurricanes are formed by a variety of conditions that all involve the convergence of surface winds over the warm waters of the world's equatorial oceans. As the winds converge, warm, moist air masses are forced aloft. As the air masses are lifted and cooled, water vapor condenses to form storm clouds and droplets of rain. The condensation process releases heat called the **latent heat of condensation** which, in turn, reheats the air masses, causing them to rise even higher. The rising column of air pulls more warm, moist air in behind it at the surface to perpetuate or even accelerate the process in a kind of feedback loop. As the columns of air are lifted, they begin to swirl around the point of lowest surface pressure. This mechanism forms almost constant clusters of massive thunderstorms in an area known as the Intertropical Convergence Zone (ITCZ), the region that circles the Earth, near the equator, where the trade winds of the Northern and Southern Hemispheres come together. Individual storms then frequently break away from these clusters and, through a series of intermediate steps, can evolve into hurricanes. Once sustained wind speeds reach 23 miles per hour (mph), the storms are called tropical depressions. If and when sustained wind speeds reach 39 mph, these systems receive names and are known as tropical storms. The storms achieve hurricane status when sustained wind speeds reach 74 mph.



Hurricanes Frances (left) and Ivan (right) on the march.
Image courtesy of National Oceanic and Atmospheric Administration



Intertropical Convergence Zone

Image courtesy of NASA's Earth Observatory

Continued on next page

Hurricanes feed on warm water as an energy source. These storms rapidly lose energy as soon as they reach land but can still spawn tornadoes and massive amounts of rain as they expend the huge amount of energy stored within the systems. While hurricanes don't create pollution in the traditional sense, they do disrupt normal air circulation patterns and exert huge influences over air masses many hundreds of miles distant. One example of how hurricanes can affect overall continental air circulation was well-documented by Jim Szechwan, an Air Quality Scientist with EPA, in late summer, 2002.

An area of high atmospheric pressure had settled in over the highly industrialized area south of Lake Michigan. High pressure systems frequently occur in that part of the Midwest during late summer and are characterized by warm, humid, stagnant air. The soot, smoke and gases emitted by area businesses linger during those stagnant days and sometimes accumulate to dangerous levels. But air inversions like the one that settled over the area in 2002 rarely last more than a few days to a week. In time, a storm system following the customary storm track across the country from west to the east, will disrupt the stagnant air and push the stale, dirty air mass toward the east and out over the Atlantic Ocean. Just such a weather front did arrive from the northwest that summer of 2002 and it began to push the dirty air toward the coast. But, the summer of 2002 was punctuated by a series of powerful tropical storms that originated over the warm waters of the equatorial Atlantic Ocean and the Gulf of Mexico, storms that would disrupt normal air circulation patterns in a big way.



Tropical Storm Gustav—Image Courtesy NASA's Earth Observatory

As the dirty air mass began to migrate toward the coast, it succumbed to the influence of Hurricane Gustav, which was churning off the coast of North Carolina. Caught between the advancing weather front and Hurricane Gustav, the polluted air mass was diverted southward down the Mississippi River valley toward the Gulf of Mexico. But, at that same time, Tropical Storm Hanna was working its way northward across the Gulf of Mexico and arrived just in time to block the polluted air mass from flowing out over the Gulf. The polluted air mass, caught between these powerful storms, lingered over Texas for several days as if planning its next escape route. In the interim, Hurricane Gustav began to weaken and lose its influence over the local weather. As Gustav weakened, some of the polluted air now trapped over Texas managed to escape across the Deep South and out over the Atlantic Ocean. But, as if in a giant conspiracy, Hanna had finally made its way on shore and began to push the polluted air mass back up the Mississippi Valley to where it had originated.

For the second time in about a week the inhabitants of the area south of Lake Michigan were visited by the same pollution, pollution that was only slightly diluted from its creation a week earlier and its subsequent journeys across the continent.

In 2002, the state of meteorological forecasting was inadequate to warn citizens of the approach of the pollution. But recent advances in meteorology and remote sensing from satellites has improved our ability to track and even predict the movements of these storms and the pollution they shepherd. The United States Environmental Protection Agency (EPA) is working with its partners, including among others, the National Oceanic and Atmospheric Administration's National Weather Service to pool their resources to not only improve their hurricane forecasting capabilities but also to accurately anticipate where and how these storms will influence the spread of polluted air masses as well.



Tropical Storm Hanna—Image Courtesy of NASA's Earth Observatory